CLAIMS

We claim:

1. A method for forming carboxylate-alumoxane nanoparticles, comprising:

    subjecting a mixture comprising boehmite and carboxylic acid to mechanical shear.

2. The method according to claim 1 wherein the method is carried out at a temperature above ambient.

3. The method according to claim 1 wherein the method is carried out at a temperature greater than 80°C.

4. The method according to claim 1 wherein the method is carried out substantially in the absence of a liquid phase.

5. The method according to claim 1 wherein the carboxylate-alumoxane particles are formed within two hours of initiation of shear application.

6. The method according to claim 1 wherein the carboxylate-alumoxane particles are formed within one hour of initiation of shear application.

7. The method according to claim 1 wherein the mixture is heated by the application of heat from an external source.

8. The method according to claim 1 wherein the mixture is heated by the application of heat from an external source and by the application of mechanical shear.

9. The method according to claim 1 wherein the carboxylic acid is selected from the group consisting of an aliphatic carboxylic acid, an aromatic carboxylic acid, and a carboxylic acid containing an additional chemically reactive functional group.

10.   The method according to claim 1 wherein the mixture is subjected to mechanical shear by passing it through a tube at a linear velocity of at least about 1,000 ft/min.

11.   The method according to claim 1 wherein the mixture is subjected to mechanical shear by passing it through a device comprising a rotor and a stator.

12.   The method according to claim 1 wherein the carboxylate-alumoxane nanoparticles have an average size of less than 200 nm.

13.   The method according to claim 1 wherein the carboxylate-alumoxane nanoparticles have a size distribution such that the particle size range is ± 20% of the average size.

14.   Carboxylate-alumoxane particles produced by the method according to claim 1.